The Road Inventory of
Lake Ilo
National Wildlife Refuge
Dunn Center, ND

Prepared By:
Federal Highway Administration
Central Federal Lands Highway Division
July 08

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INTRODUCTION

The Transportation Equity Act for the 21st Century (Public Law 105-178) created the Refuge Roads Program. Refuge roads are those public roads that provide access to or within a unit of the National Wildlife Refuge System and for which title and maintenance responsibility is vested in the United States Government. Funds from the Highway Trust Fund are available for refuge roads and can be used by the station to pay the cost of:

(a) Maintenance and improvements of refuge roads.
(b) Maintenance and improvements of:
    (1) Adjacent vehicle parking areas
    (2) Provision for pedestrians and bicycles and
    (3) Construction and reconstruction of roadside rest areas that are located in or adjacent to wildlife refuges
(c) Administrative costs associated with such maintenance and improvements.

The funds available for refuge roads are to be disbursed based on the relative needs of the various refuges in the National Wildlife Refuge System, and taking into consideration:

(a) The comprehensive conservation plan for each refuge;
(b) The need for access as identified through land use planning; and
(c) The impact of land use planning on existing transportation facilities.

To determine the relative needs of the U.S. Fish and Wildlife Service, the Federal Highway Administration (FHWA) was asked to inventory all public access roads and parking lots and provide a condition assessment of each. In 2008 the inventory was expanded to include administrative (service use only) roads in addition to public access roads. An FHWA representative meets with refuge personnel to identify route segments and assign route numbers and functional classifications (See Appendix) for each route. All roads and parking lots are mapped using Trimble GPS units and visually assessed for condition using the RSL method of evaluation developed at Utah State University (See Appendix). Culverts, Gates, Guardrails and Low Water Crossings are also mapped and inspected for any obvious defects.

An estimate is provided, in year 2008 dollars, based on the condition determined by the rating system. Estimates are based upon data and location factors from the 2008 RS Means Heavy Construction Cost Data 22nd Annual Edition. Cost estimates should be evaluated on a case-by-case basis when being used for programming purposes.

In addition to this report, the FHWA will furnish the condition ratings of each route and segment to the Fish and Wildlife Service in a Microsoft Access database so the data can be included in their Real Property Inventory.

Lake Ilo NWR

Summaries

Route Miles and Percentages by Functional Class and Condition

	Condition Rating (Based on RSL)*										TOTAL
	Excellent		Good		Fair		Poor		Failed		
F. C.	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	MILES
I	1.34	41.0%	1.93	59.0%							3.27
II	2.48	87.8%	0.34	12.2%							2.82
III			0.03	100%							0.03
IV			0.21	100%							0.21
V	0.61	32.0%	1.30	68.0%							1.90
Totals	**4.43**	**53.8%**	**3.81**	**46%**							**8.24**

*For a description of condition ratings for the various surface types see the Appendix.

Route Miles and Percentages by Surface Type and Condition

	Paved Condition Rating [Condition(RSL)]										TOTAL
	Excellent (19-20)		Good (13-18)		Fair (7-12)		Poor (1-6)		Failed (0)		
S. T.	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	MILES
AS											
CO											
Totals											

	Unpaved Condition Rating [Condition(RSL)]										TOTAL
	Excellent (8-10)		Good (5-7)		Fair (3-4)		Poor (1-2)		Failed (0)		
S. T.	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	MILES
GR	3.95	60.0%	2.63	40.0%							6.58
NA			0.22	100%							0.22
PR	0.48	33.4%	0.95	66.6%							1.43
Totals	**4.43**	**53.8%**	**3.81**	**46.2%**							**8.24**

Square Footage (Parking Areas)

	Condition Rating										Total
	Excellent		Good		Fair		Poor		Failed		
	Square		Square		Square		Square		Square		Square
S. T.	Feet	%	Feet	%	Feet	%	Feet	%	Feet	%	Feet
AS											
CO											
GR			3541	100%							3541
NA			15418	44.9%	4474	13.0%	14442	42.1%			34334
PR											
Totals			**18959**	**50.1%**	**4474**	**11.8%**	**14442**	**38.1%**			**37875**

Lake Ilo NWR

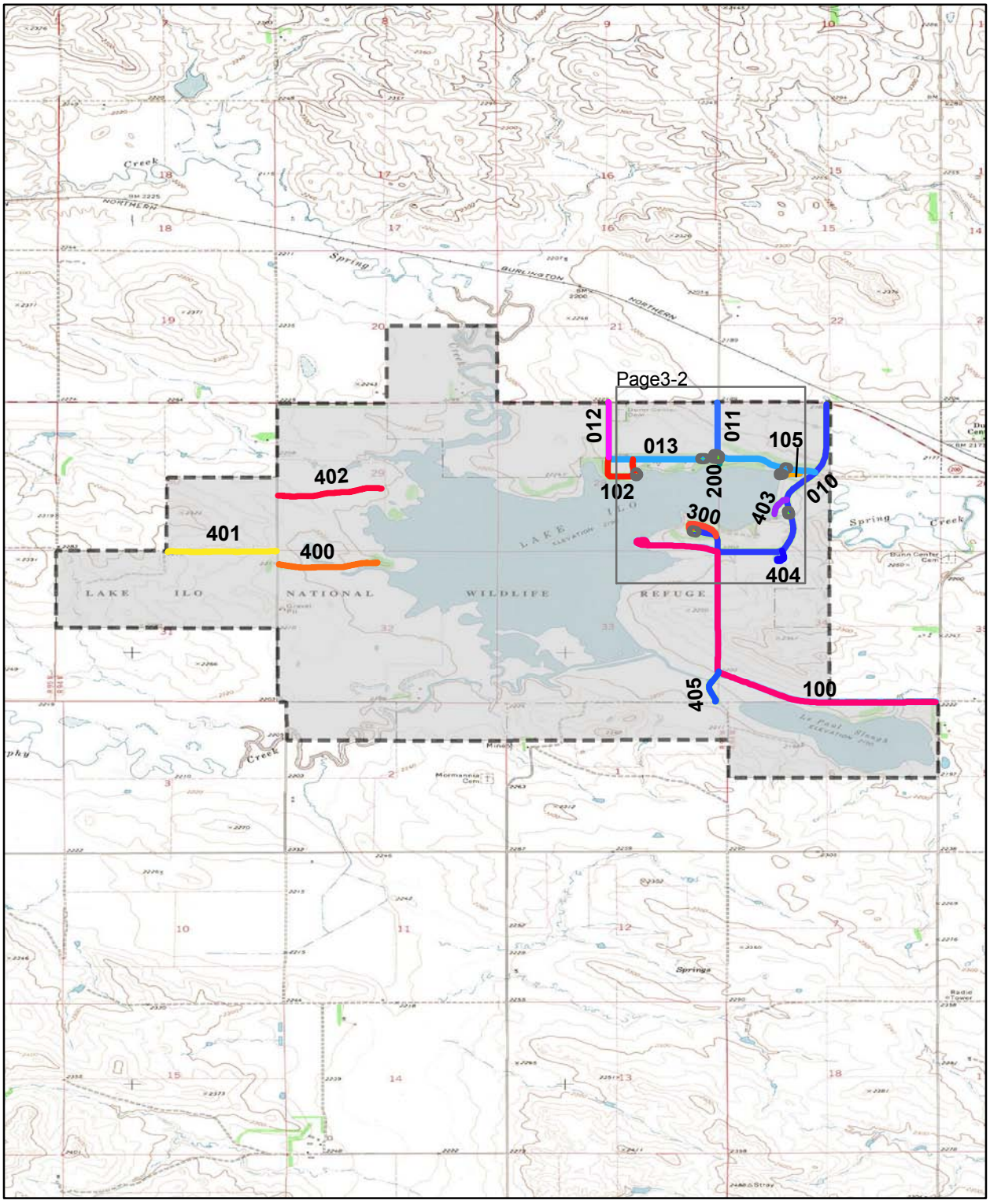
Summaries

Route Miles and Percentages by Use Type and Condition

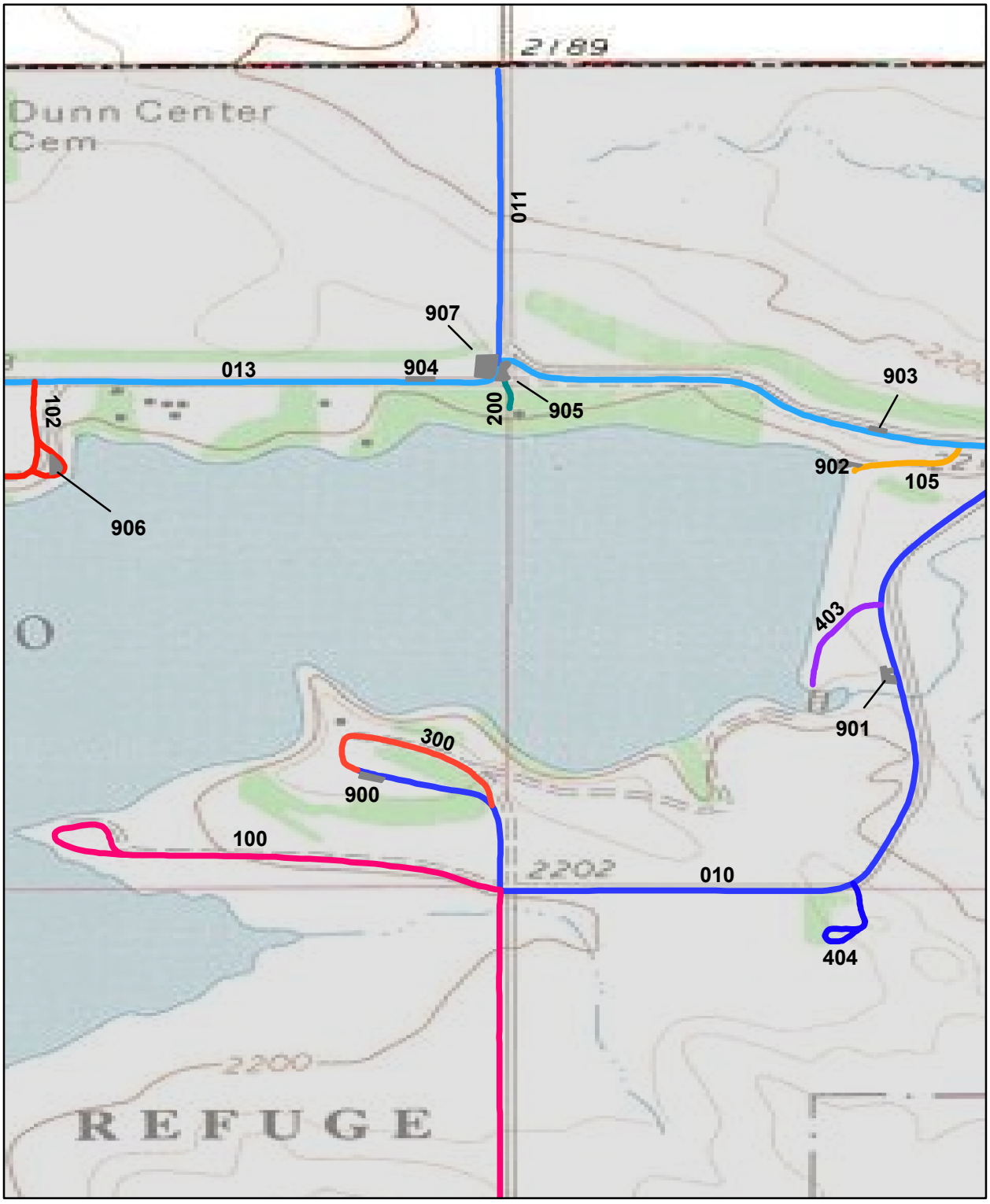
	Road Condition Rating: Public/Administrative Use											
	Excellent		Good		Fair		Poor		Failed		TOTAL	PERCENT TOTAL
USE TYPE	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	MILES	MILES
Public (FC I-III)	3.82	62.3%	2.31	38%							6.13	**74%**
Admin (FC IV-V)	0.61	28.8%	1.50	71.2%							2.11	**26%**
Totals	**4.43**	**53.8%**	**3.81**	**46%**							**8.24**	

	Parking Condition Rating											
	Excellent		Good		Fair		Poor		Failed		Total	PERCENT TOTAL
	Square		Square		Square		Square		Square		Square	SF
USE TYPE	Feet	%	Feet	%	Feet	%	Feet	%	Feet	%	Feet	
Public			18959	50.1%	4474	11.8%	14442	38.1%			37875	**100%**
Admin			0									
Totals			**18959**	**50.1%**	**4474**	**11.8%**	**14442**	**38.1%**			**37875**	

LAKE ILO NATIONAL WILDLIFE REFUGE
ROUTE LOCATION MAP



LAKE ILO NATIONAL WILDLIFE REFUGE
ROUTE LOCATION MAP



Lake Ilo 62571 - ROUTE IDENTIFICATION LIST (NUMERIC)

Shading Color Key:	White = Paved Routes
	Yellow = Unpaved Routes

RTE #	Asset Number	ROUTE NAME	RTE MI	ROUTE DESCRIPTION	PAVED MI	UN-PAVED MI	LANES	FC
010	10028396	Refuge Entrance Road	1.56	From Highway 200, to Headquarters Parking (Rte 900)	-	1.56	1	1
011	10028434	Park Access Road	0.36	From Hwy 200 to North Shore Drive (Rte 013)	-	0.36	1	1
012	10028435	Cemetery Lake Road	0.37	From Hwy 200 to Boat Launch Loop (Rte 102)	-	0.37	1	1
013	10028435	North Shore Drive	0.99	From Refuge Entrance Road (Rte 010) to Cemetery Lake Road (Rte 012)	-	0.99	1	1
100	10028433	Observation Point Road	2.30	From CR 1323 to End of Observation Point Loop	-	2.30	1	2
102	10028436	Boat Launch Loop	0.42	From Cemetery Lake Road (Rte 012) to North Shore Drive (Rte 013)	-	0.42	1	2
105	10028435	Fishing Pier Access Road	0.10	From North Shore Drive (Rte 013) to Fishing Pier Parking (Rte 902)	-	0.10	1	2
200	-	Picnic Area Access Road	0.03	From Kiosk Parking (Rte 905) to picnic area	-	0.03	1	3
300	10028455	Headquarters Loop Road	0.21	From Refuge Entrance Road (Rte 010) at HQ to Refuge Entrance Road (Rte 010) East of HQ	-	0.21	1	4
400	10028455	Donohoe Road	0.45	From 104th Ave SW to end of route	-	0.45	1	5
401	10028455	Windmill Road	0.50	From 104th Ave SW to end of route at west refuge boundary	-	0.50	1	5
402	10028455	Sharp-tail Road	0.48	From 104th Ave SW to Grove	-	0.48	1	5
403	10028455	Dam Access Road	0.12	From Refuge Entrance Road (Rte 010) to south end of dam	-	0.12	1	5
404	10028455	Bone Yard Road	0.13	From Refuge Entrance Road (Rte 010) to end of loop	-	0.13	1	5
405	10028455	Lee Paul Structure Road	0.22	From Observation Point Road (Rte 100) to end of route	-	0.22	1	5

Lake Ilo 62571 - ROUTE IDENTIFICATION LIST (PARKING)

Shading Color Key:	Green = Unpaved Parking Lots
	Blue = Paved Parking Lots

RTE #	ASSET NUMBER	ROUTE NAME	RTE SQFT	ROUTE DESCRIPTION	PAVED SQFT	UN-PAVED SQFT
900	10028437	Headquarters Parking	3541		-	3541
901	10058771	Chesley Dinkins Memorial Parking	4902		-	4902
902	10058771	Fishing Pier Parking	3205		-	3205
903	10028460	Lake Overlook Parking	1756		-	1756
904	10028461	Teepee Parking	2748		-	2748
905	10058771	Kiosk Parking	4563		-	4563
906	10058771	Boatramp Parking	4474		-	4474
907	10028459	Ilo Park Parking	12686		-	12686

CHANGES TO THE FISH AND WILDLIFE SERVICE ROAD INVENTORY REPORT
Lake Ilo 62571

Routes added to previous inventory: No routes added to previous inventory.

	Rte #	Rte Name		
1.			Rte Desc:	
			Reason for Addition:	
2.			Rte Desc:	
			Reason for Addition:	
3.			Rte Desc:	
			Reason for Addition:	

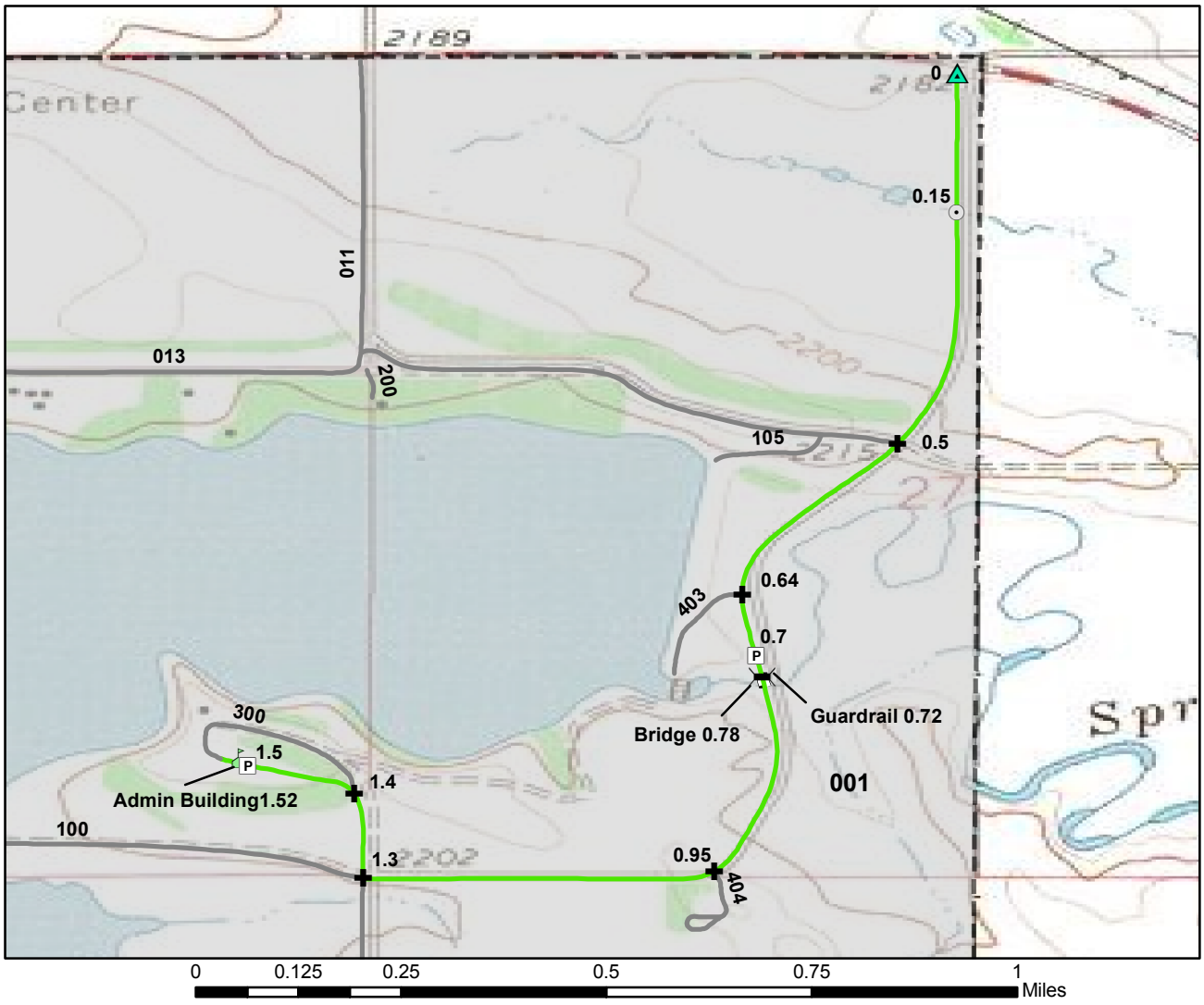
Routes removed from previous inventory: One route removed from previous inventory.

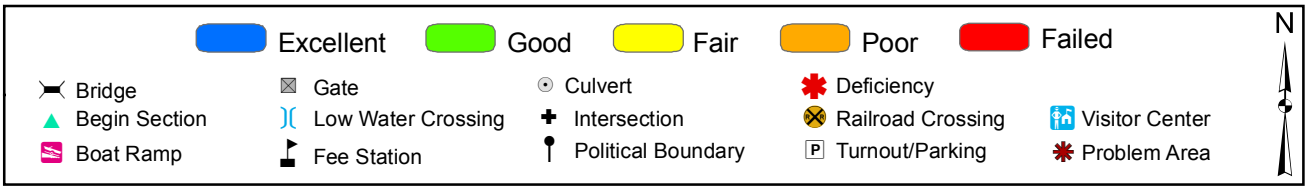
	Rte #	Rte Name		
1.	104	Murphy Access Rd.	Rte Desc:	
			Reason for Removal:	Not owned by FWS
2.			Rte Desc:	
			Reason for Removal:	
3.			Rte Desc:	
			Reason for Removal:	

Routes modified from previous inventory: No routes modified from previous inventory.

	Rte #	Rte Name		
1.			Rte Desc:	
			Modification:	
2.			Rte Desc:	
			Modification:	
3.			Rte Desc:	
			Modification:	

Comments:



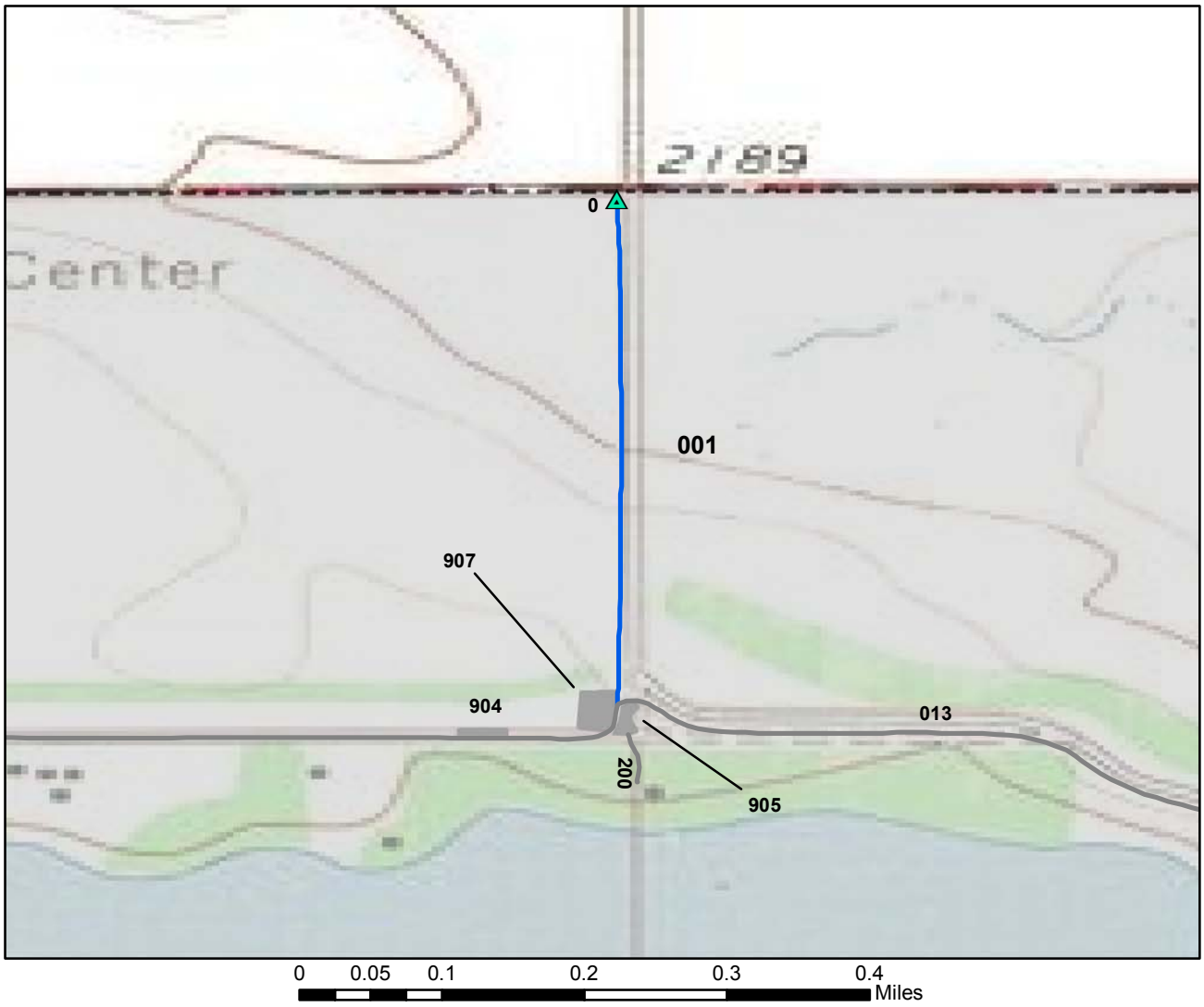


ROUTE: 010 Refuge Entrance Road TOTAL LENGTH: 1.56 Miles

ASSET: 10028396

RTE DESCRIPTION: From Highway 200, to Headquarters Parking (Rte 900)

Section Number	001				
Section Length (miles)	1.56				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	14				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	$2400				
CRV	$1024700				



Excellent Good Fair Poor Failed

Bridge
Begin Section
Boat Ramp
Gate
Low Water Crossing
Fee Station
Culvert
Intersection
Political Boundary
Deficiency
Railroad Crossing
Turnout/Parking
Visitor Center
Problem Area

N

ROUTE: 011 Park Access Road TOTAL LENGTH: 0.36 Miles

ASSET: 10028434

RTE DESCRIPTION: From Hwy 200, to North Shore Drive (Rte 013)

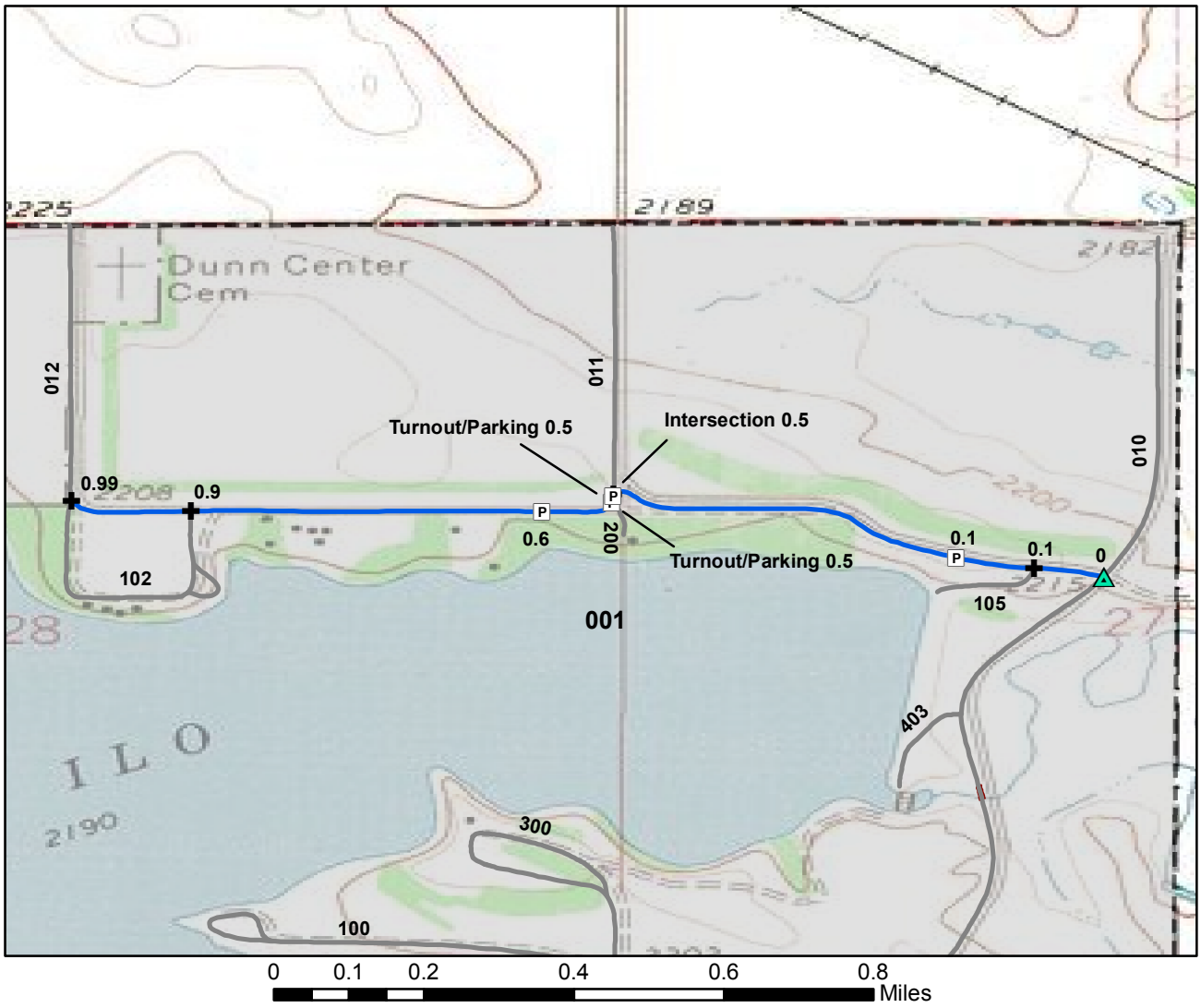
Section Number	001				
Section Length (miles)	0.36				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	12				
Roadway Condition Information					
Condition	Excellent				
Remaining Service Life (years)	10				
Cost Estimate	$0				
CRV	$233300				

ROUTE: 012 Cemetery Lake Road TOTAL LENGTH: 0.37 Miles

ASSET: 10028435

RTE DESCRIPTION: From Highway 200, to Boat Launch Loop (Rte 102)

Section Number	001				
Section Length (miles)	0.37				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	12				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	$600				
CRV	$241100				

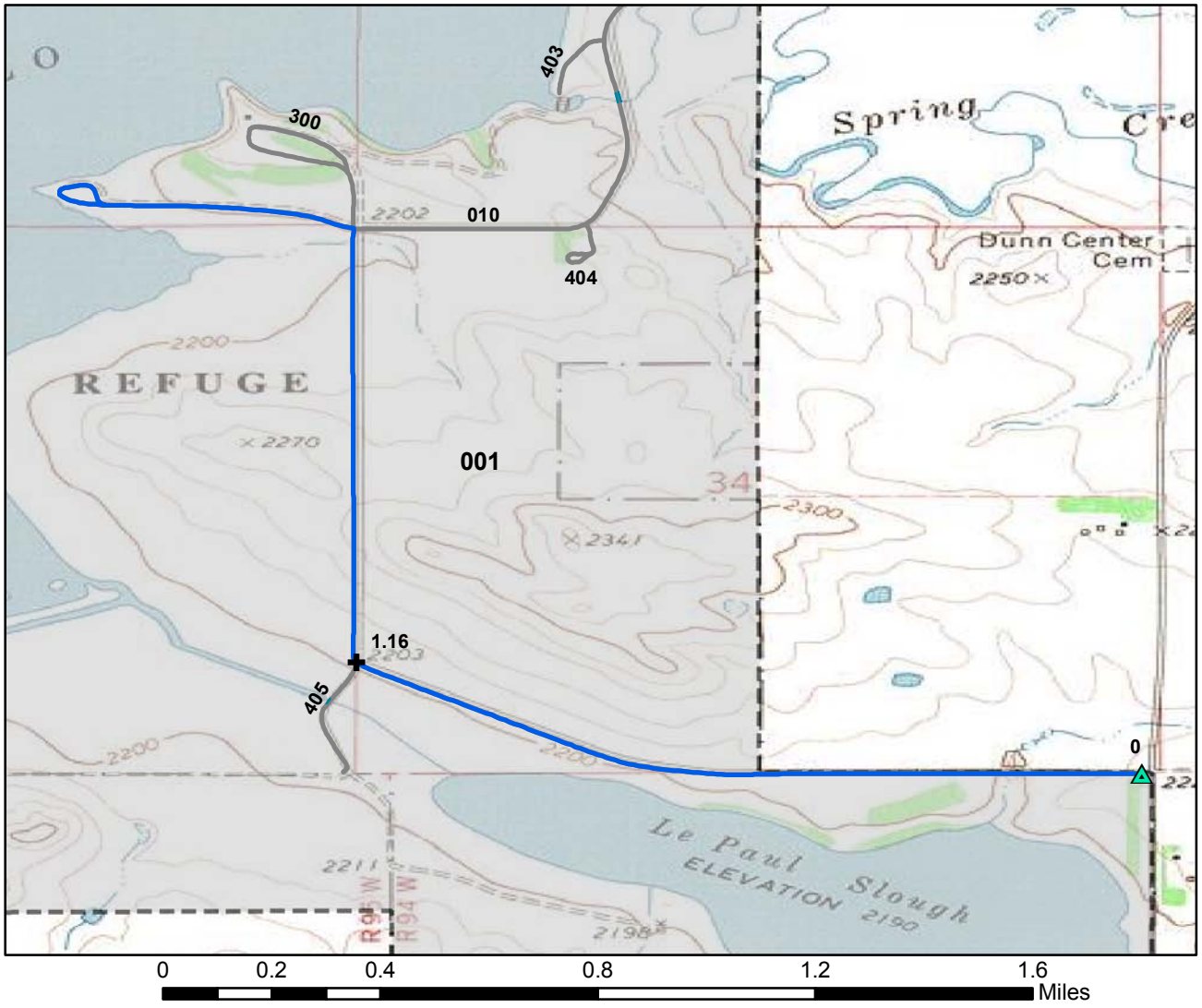


ROUTE: 013 North Shore Drive TOTAL LENGTH: 0.99 Miles

ASSET: 10028435

RTE DESCRIPTION: From Refuge Entrance Road (Rte 010), to Cemetery Lake Road (Rte 012)

Section Number	001				
Section Length (miles)	0.99				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	12				
Roadway Condition Information					
Condition	Excellent				
Remaining Service Life (years)	8				
Cost Estimate	$0				
CRV	$647000				

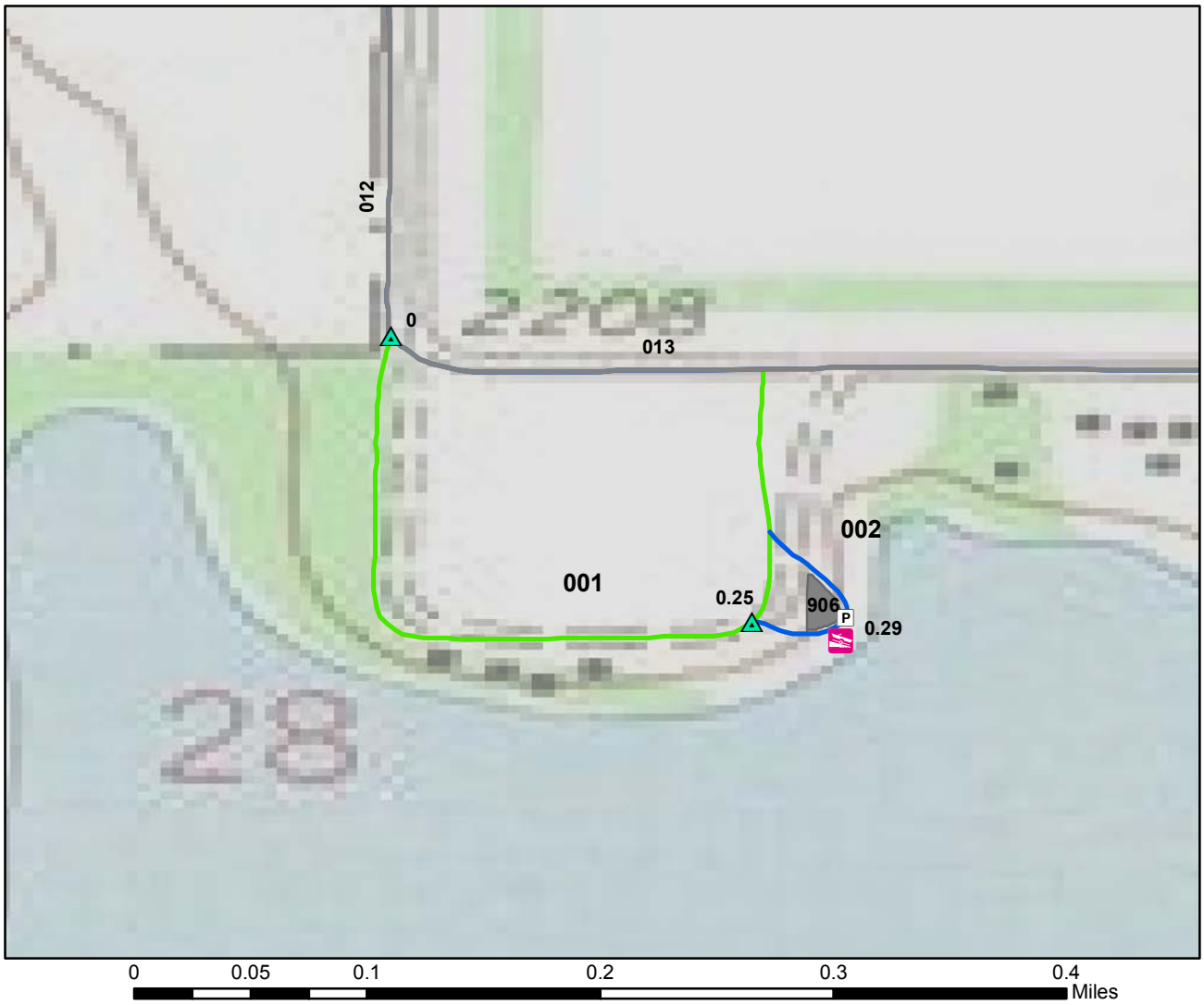


ROUTE: 100 Observation Point Road TOTAL LENGTH: 2.30 Miles

ASSET: 10028433

RTE DESCRIPTION: From County Road 1323, to end of loop

Section Number	001				
Section Length (miles)	2.30				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
Roadway Condition Information					
Condition	Excellent				
Remaining Service Life (years)	8				
Cost Estimate	$0				
CRV	$1510000				

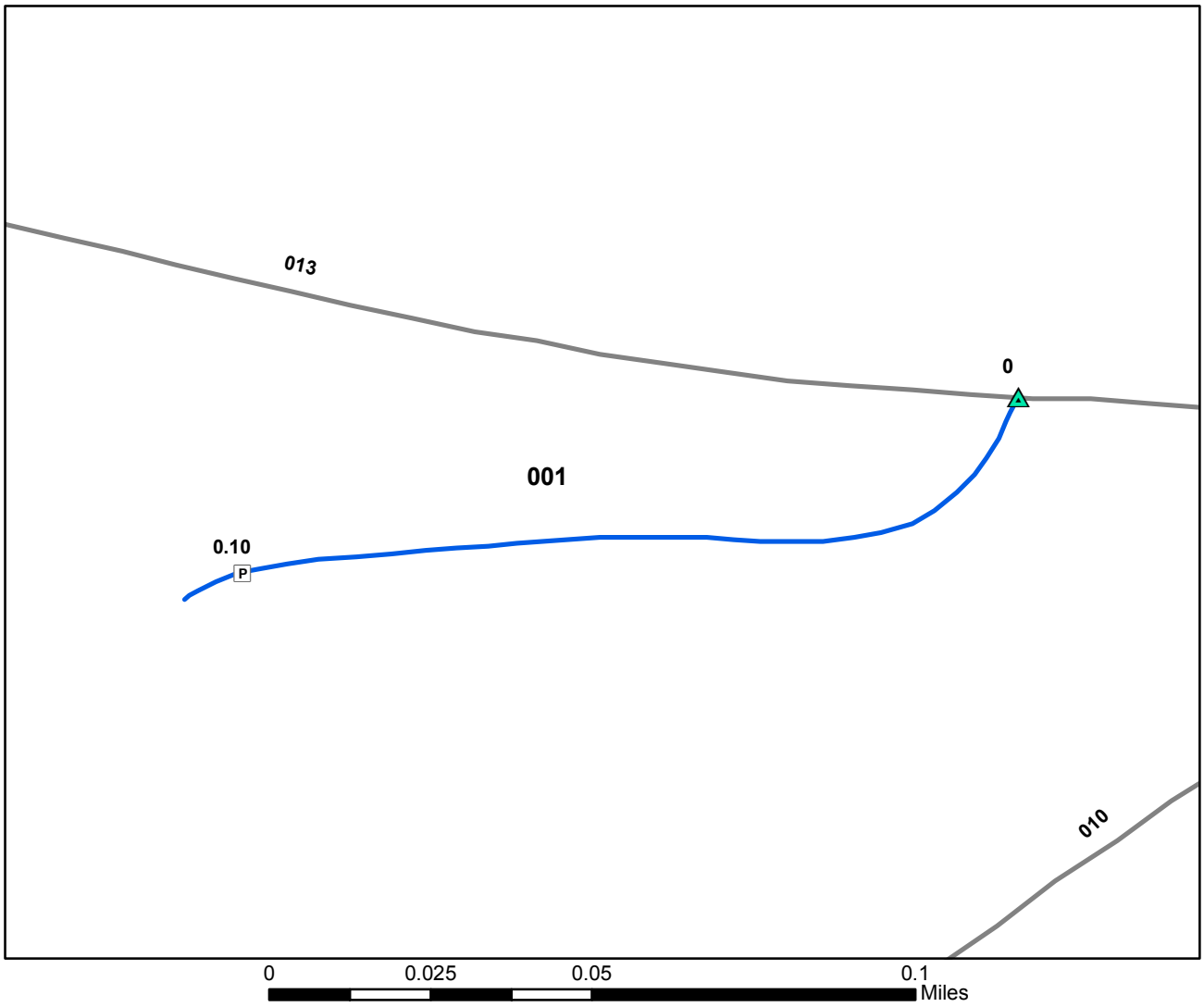


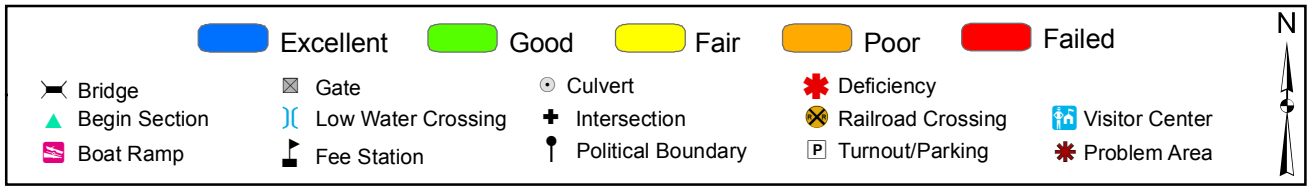
ROUTE: 102 Boat Launch Loop TOTAL LENGTH: 0.42 Miles

ASSET: 10028436

RTE DESCRIPTION: From Cemetery Lake Road (Rte 012), to North Shore Drive (Rte 013)

Section Number	001	002			
Section Length (miles)	0.34	0.08			
Inspection Date	7/7/2008	7/7/2008			
Section Information					
Surface Type	Gravel	Gravel			
Number of Lanes	1	1			
Roadway Width (feet)	10	10			
Roadway Condition Information					
Condition	Good	Excellent			
Remaining Service Life (years)	7	10			
Cost Estimate	$500	$0			
CRV	$226500	$49900			



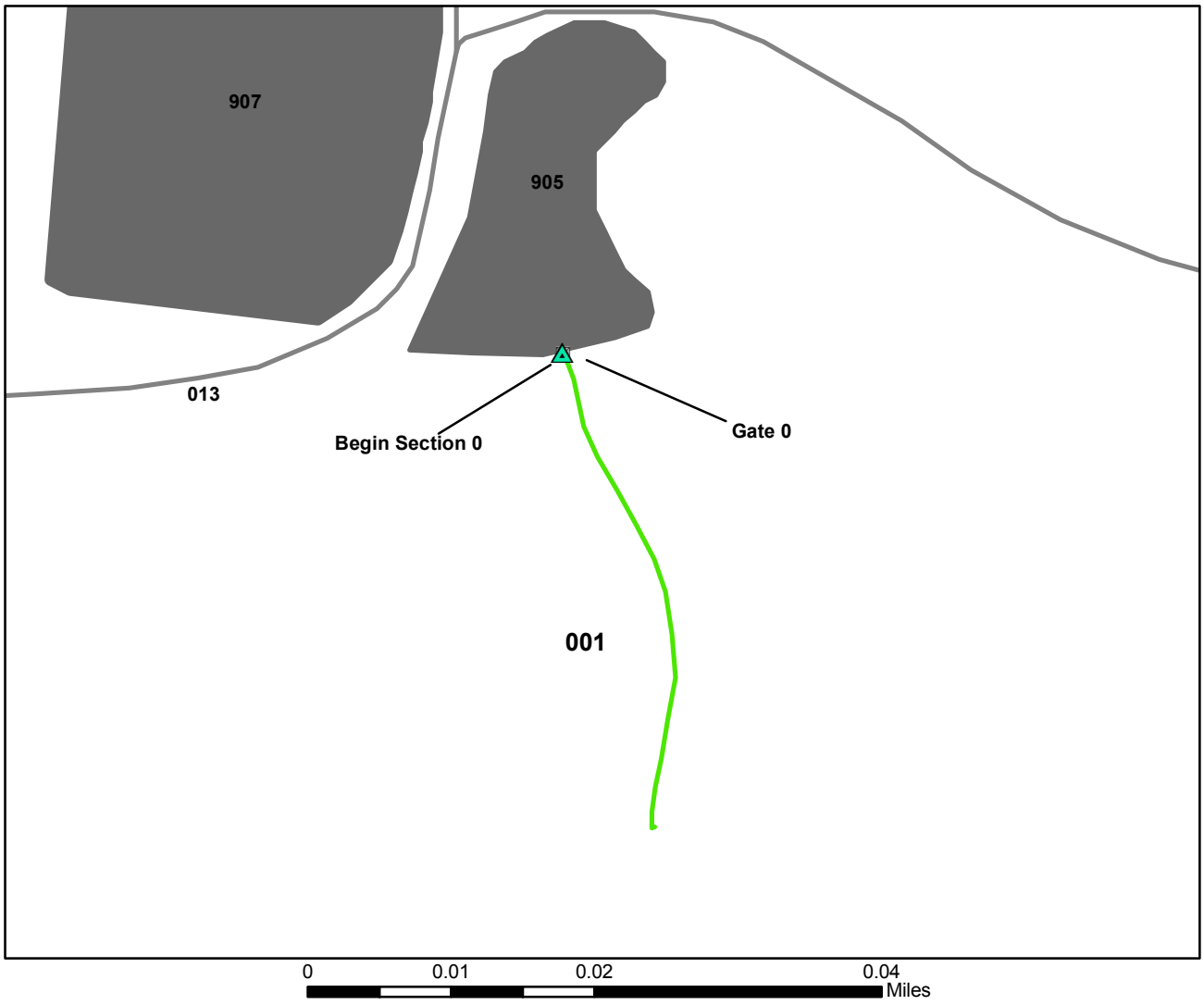


ROUTE: 105 Fishing Pier Access Road TOTAL LENGTH: 0.10 Miles

ASSET: 10028435

RTE DESCRIPTION: From North Shore Drive (Rte 013), to Fishing Pier Parking (Rte 902)

Section Number	001				
Section Length (miles)	0.10				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
Roadway Condition Information					
Condition	Excellent				
Remaining Service Life (years)	9				
Cost Estimate	$0				
CRV	$67000				



Excellent Good Fair Poor Failed

Bridge
Begin Section
Boat Ramp
Gate
Low Water Crossing
Fee Station
Culvert
Intersection
Political Boundary
Deficiency
Railroad Crossing
Turnout/Parking
Visitor Center
Problem Area

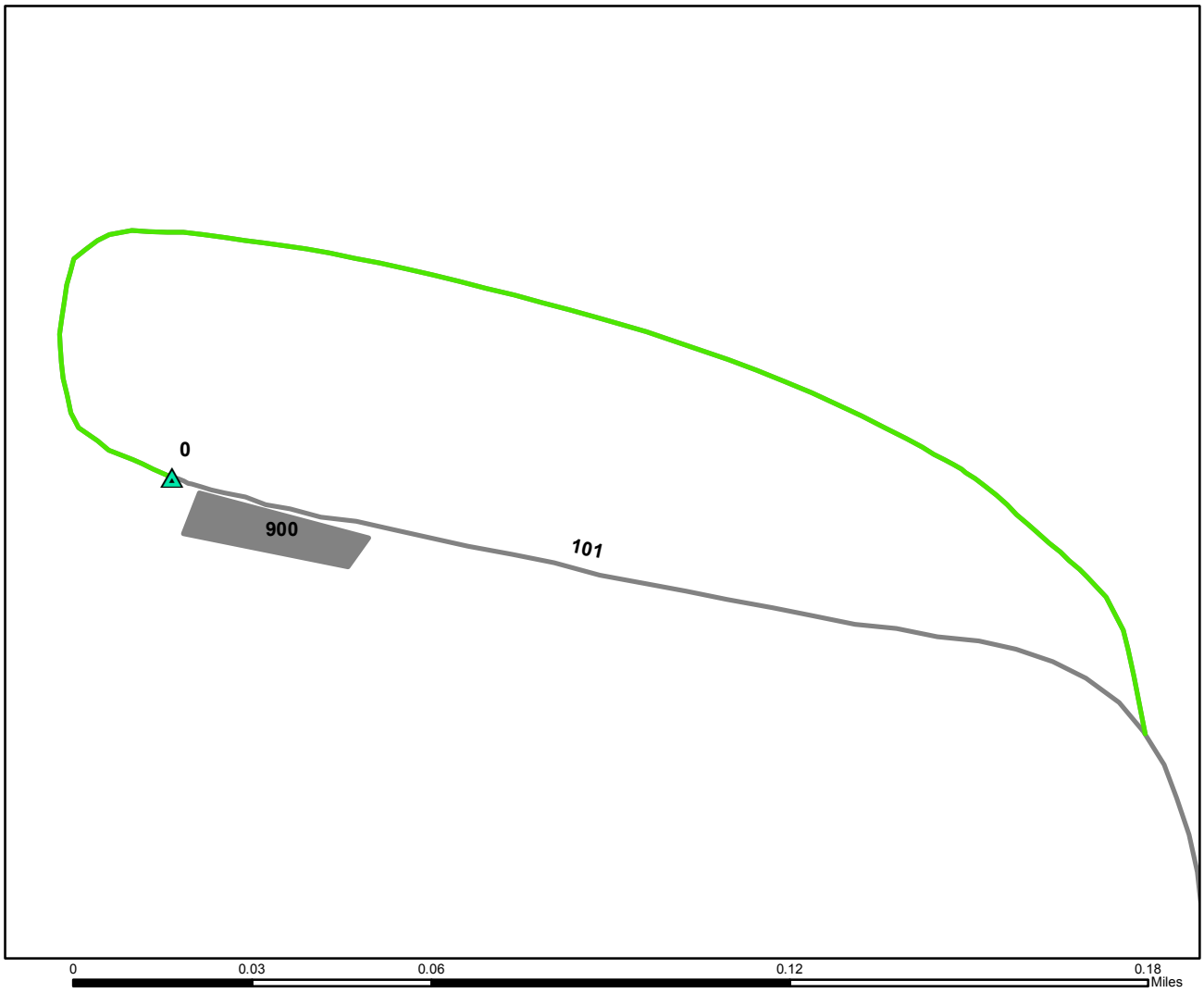
N

ROUTE: 200 Picnic Area Access Road TOTAL LENGTH: 0.03 Miles

ASSET:

RTE DESCRIPTION: From Kiosk Parking (Rte 905), to picnic area

Section Number	001				
Section Length (miles)	0.03				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	$100				
CRV	$22600				



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N

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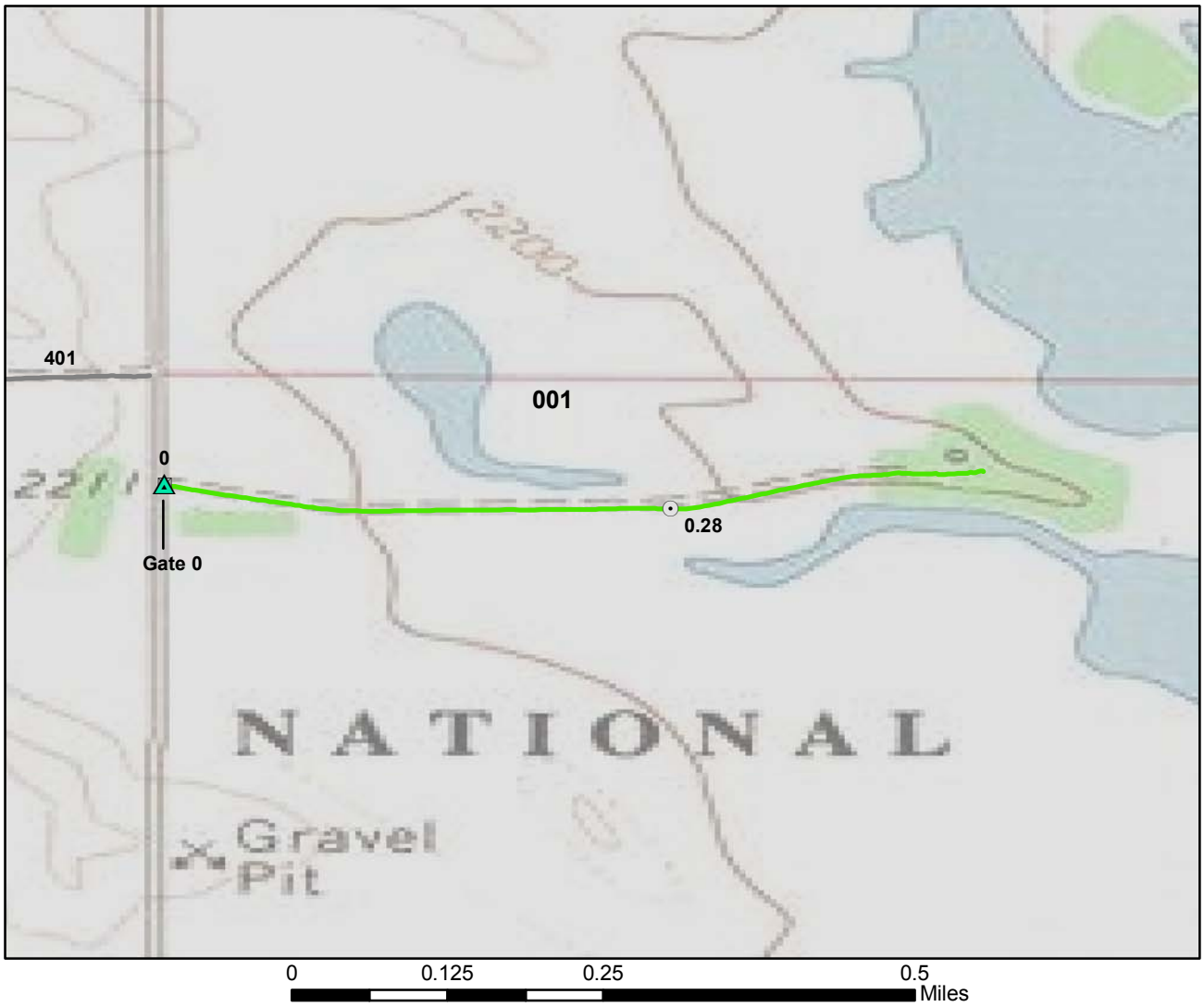
Political Boundary
Deficiency
Railroad Crossing
Turnout/Parking
Visitor Center
Problem Area

ROUTE: 300 Headquarters Loop Road TOTAL LENGTH: 0.21 Miles

ASSET: 10028455

RTE DESCRIPTION: From Refuge Entrance Road (Rte 010) at HQ, to Refuge Entrance Road (Rte 010) East of HQ

Section Number	001				
Section Length (miles)	0.21				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	$300				
CRV	$134800				



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Visitor Center
Problem Area

N

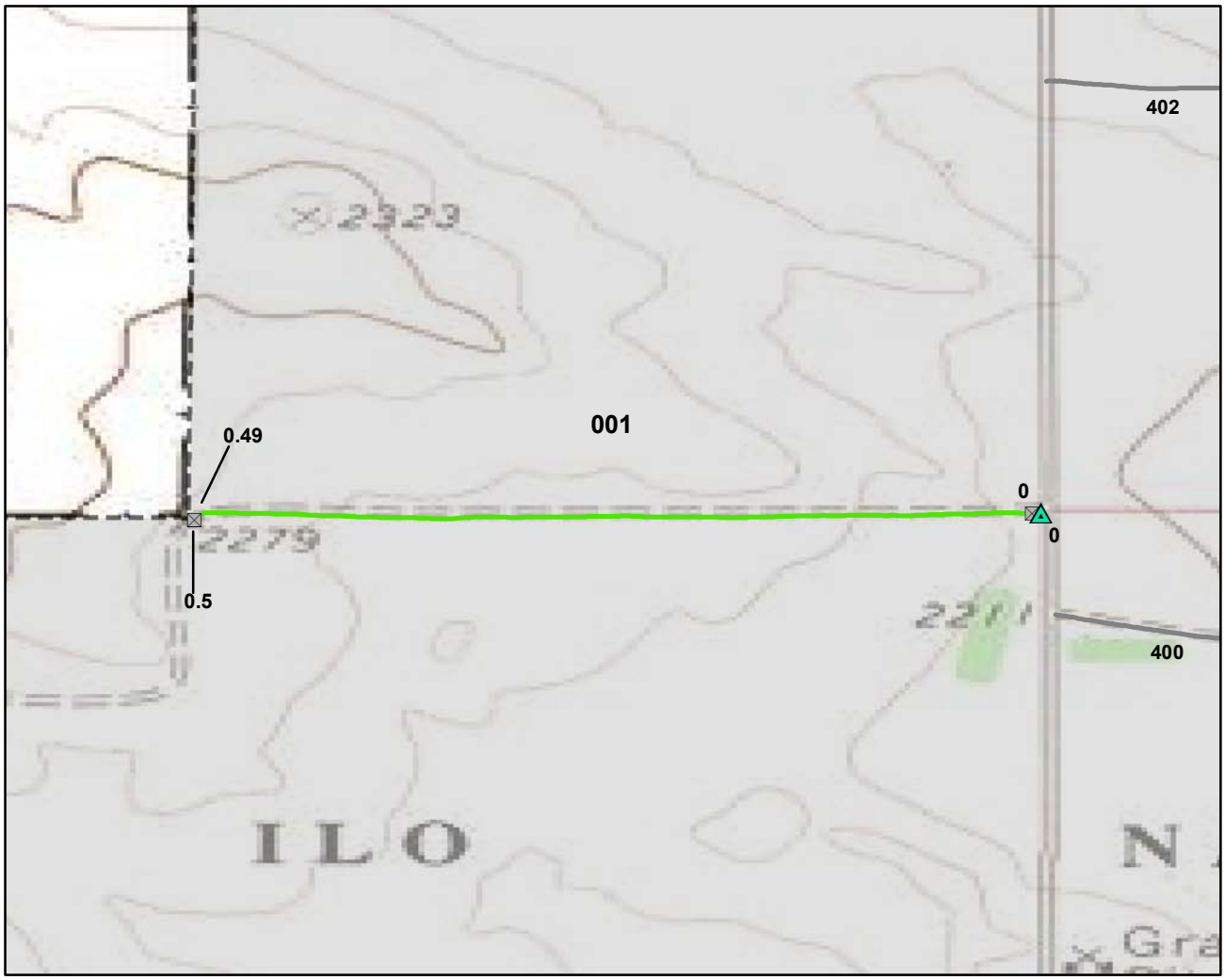
ROUTE: 400 Donohoe Road

TOTAL LENGTH: 0.45 Miles

ASSET: 10028455

RTE DESCRIPTION: From 104th Ave SW, to end of route

Section Number	001				
Section Length (miles)	0.45				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	$200				
CRV	$0				



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Visitor Center
Problem Area

N

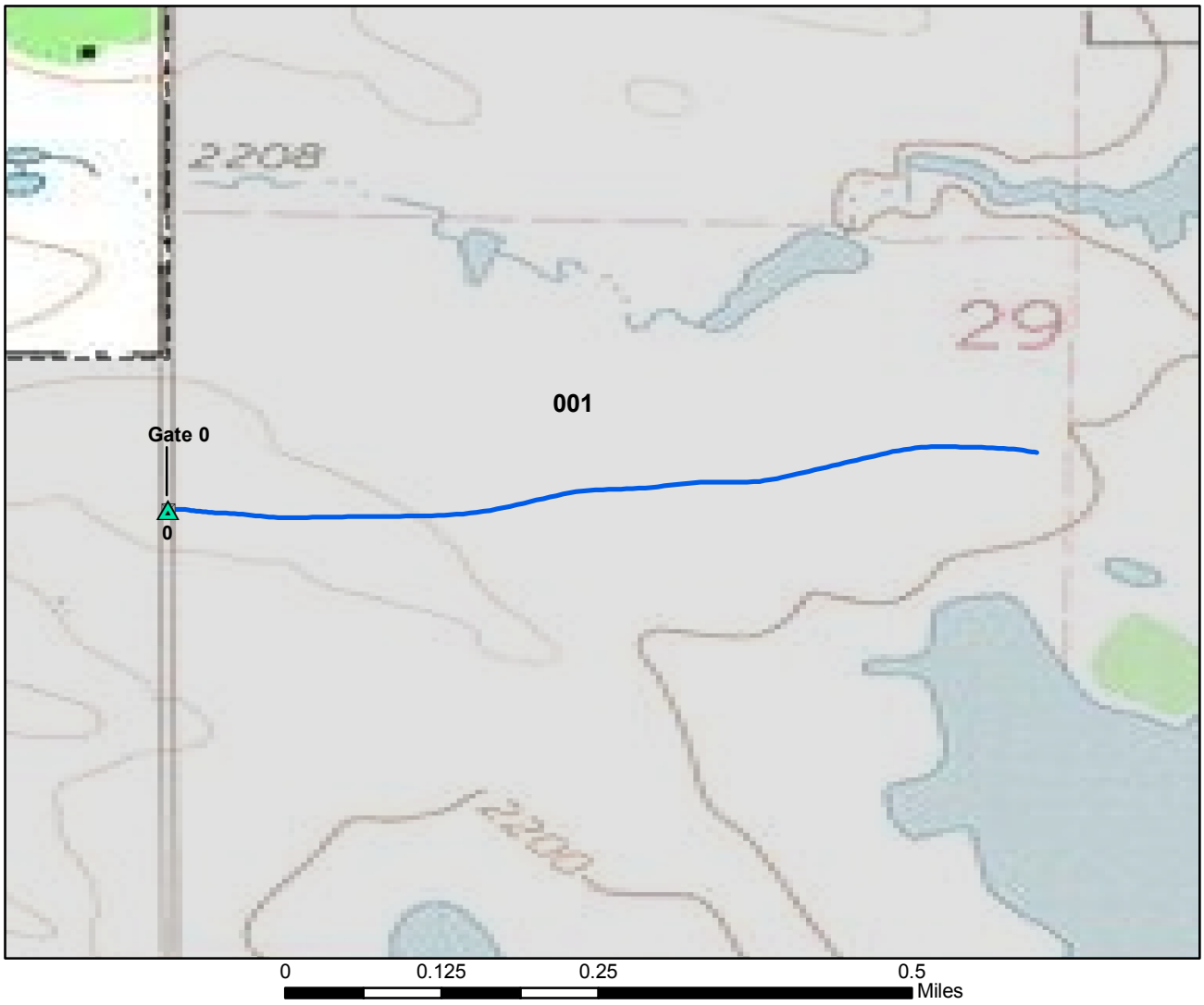
ROUTE: 401 Windmill Road

TOTAL LENGTH: 0.50 Miles

ASSET: 10028455

RTE DESCRIPTION: From 104th Ave SW, to end of route at west refuge boundary

Section Number	001				
Section Length (miles)	0.50				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	5				
Cost Estimate	$200				
CRV	$0				



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Turnout/Parking
Visitor Center
Problem Area

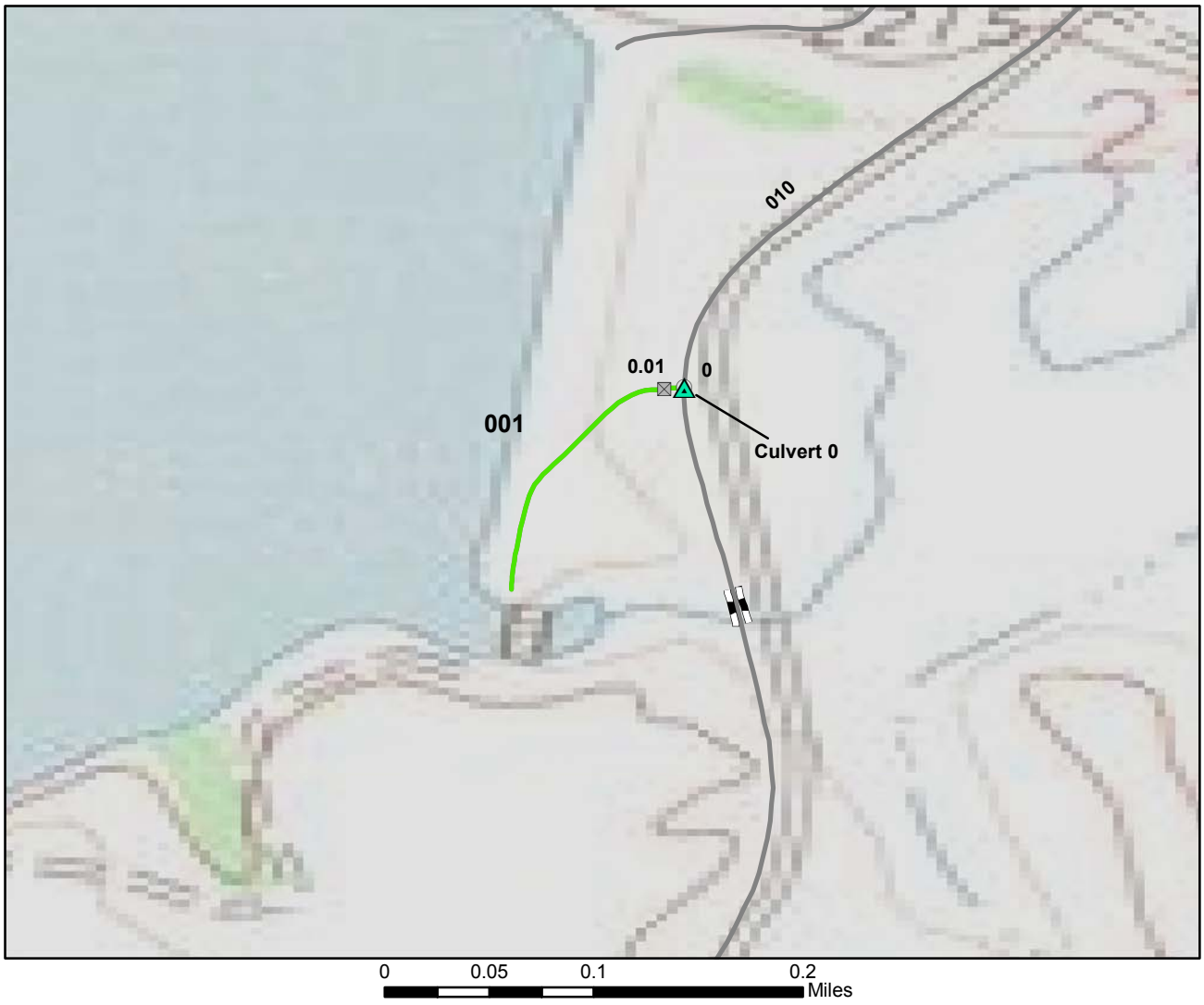
N

ROUTE: 402 Sharp-tail Road TOTAL LENGTH: 0.48 Miles

ASSET: 10028455

RTE DESCRIPTION: From 104th Ave SW, to end of route

Section Number	001				
Section Length (miles)	0.48				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Excellent				
Remaining Service Life (years)	9				
Cost Estimate	$0				
CRV	$0				



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Visitor Center
Problem Area

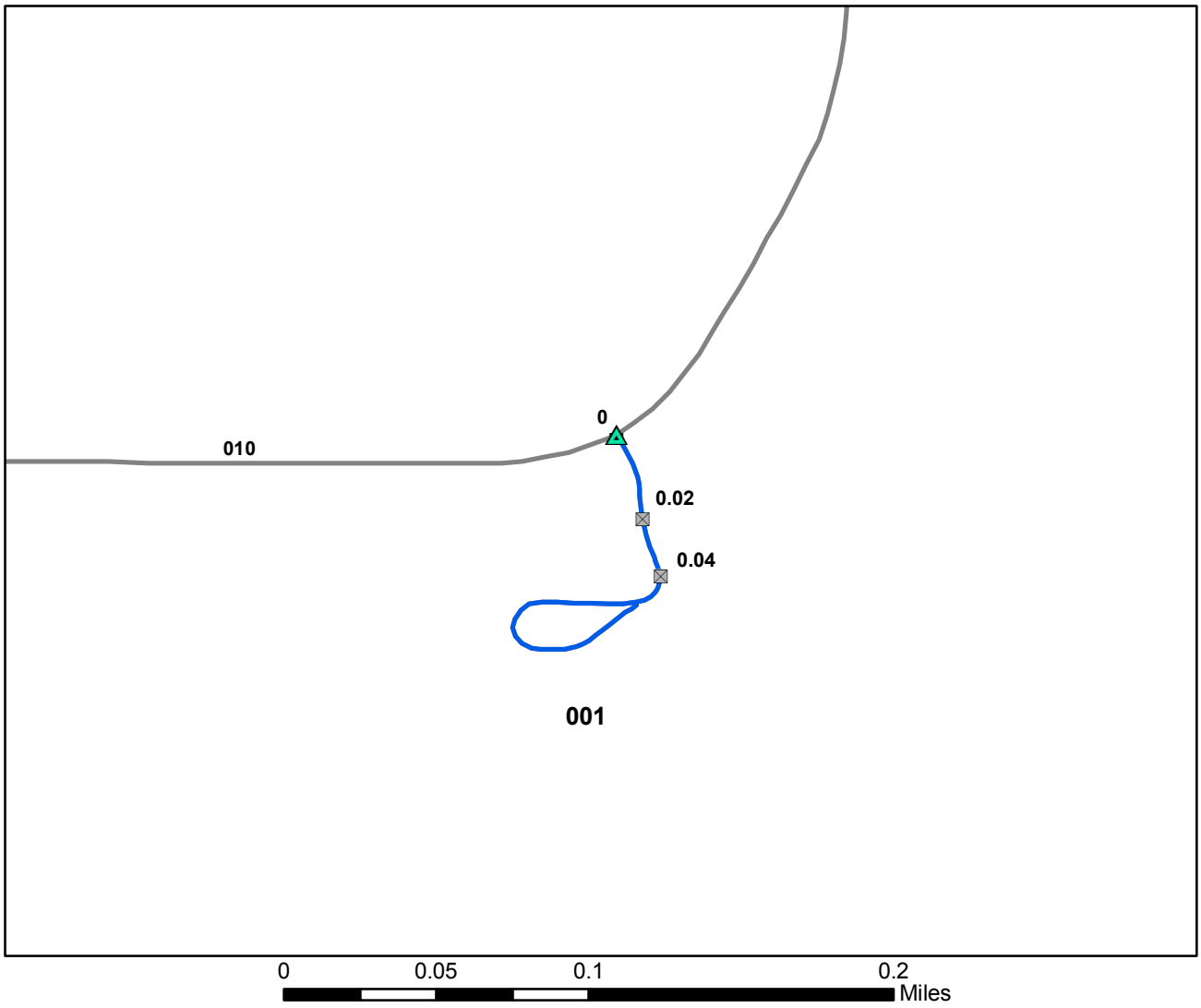
N

ROUTE: 403 Dam Access Road TOTAL LENGTH: 0.12 Miles

ASSET: 10028455

RTE DESCRIPTION: From Refuge Entrance Road (Rte 010), to south end of dam

Section Number	001				
Section Length (miles)	0.12				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	$200				
CRV	$80200				



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Turnout/Parking
Visitor Center
Problem Area

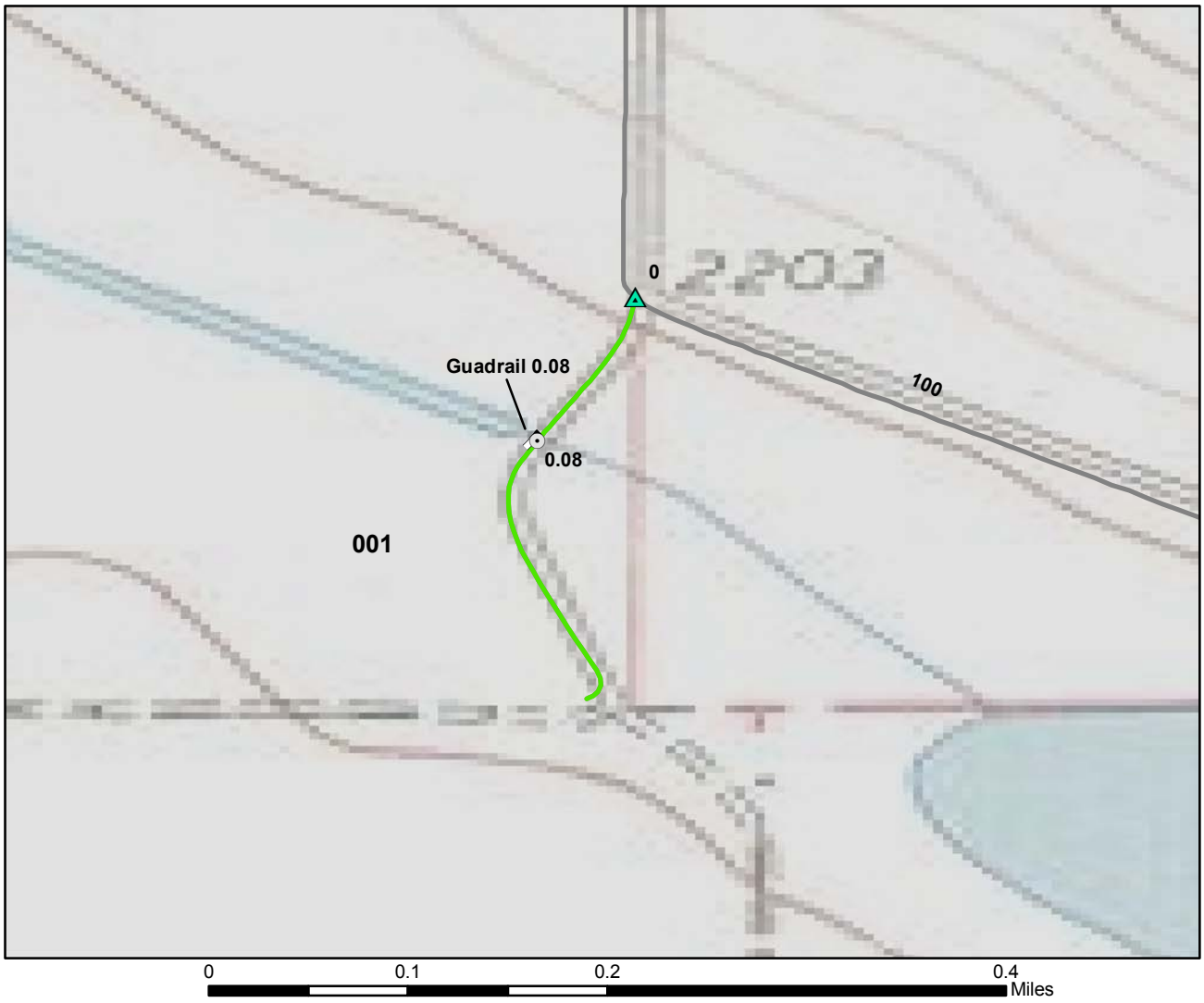
N

ROUTE: 404 Bone Yard Road TOTAL LENGTH: 0.13 Miles

ASSET: 10028455

RTE DESCRIPTION: From Refuge Entrance Road (Rte 010) to end of loop

Section Number	001				
Section Length (miles)	0.13				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
Roadway Condition Information					
Condition	Excellent				
Remaining Service Life (years)	9				
Cost Estimate	$0				
CRV	$85000				



Excellent Good Fair Poor Failed

Bridge
Begin Section
Boat Ramp
Gate
Low Water Crossing
Fee Station
Culvert
Intersection
Political Boundary
Deficiency
Railroad Crossing
Turnout/Parking
Visitor Center
Problem Area

N

ROUTE: 405 Lee Paul Structure Road TOTAL LENGTH: 0.22 Miles

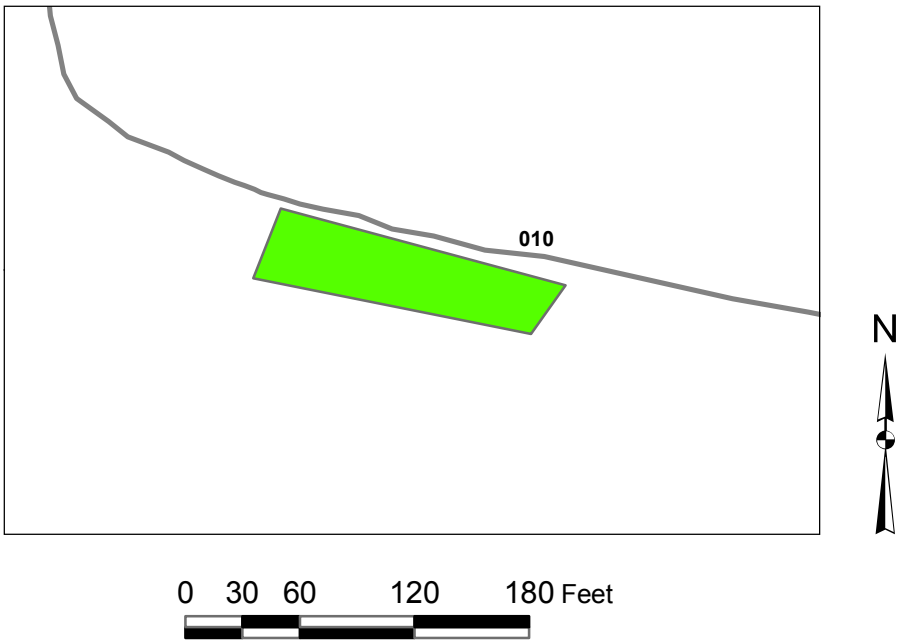
ASSET: 10028455

RTE DESCRIPTION: From Observation Point Road (Rte 100) to end of route

Section Number	001				
Section Length (miles)	0.22				
Inspection Date	7/7/2008				
Section Information					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	10				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	$400				
CRV	$74700				

Lake Ilo
Route 900: Headquarters Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10028437	7/7/2008	Gravel	3541	Good	$500



Lake Ilo NWR Bridge Inventory					
Rte #	**Milepost**	**NBIS #**	**Sufficiency Rating**	**Functionally Obsolete**	**Structurally Deficient**
010	0.725	000062571-00019	990	N/A	Not Deficient

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 010 ROUTE NAME: Refuge Entrance Road

Photo # 6090 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 010 ROUTE NAME: Refuge Entrance Road

Photo # 6098 - MP 0.78 - Bridge

ROUTE NUMBER: 011 ROUTE NAME: Park Access Road

Photo # 6087 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 012 ROUTE NAME: Cemetery Lake Road

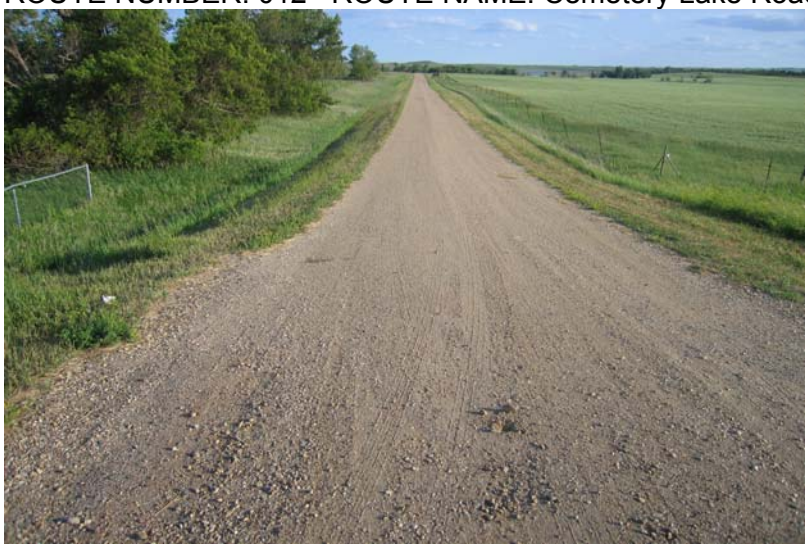


Photo # 6081 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 013 ROUTE NAME: North Shore Drive

Photo # 6084 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 100 ROUTE NAME: Observation Point Road

Photo # 6108 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 102 ROUTE NAME: Boat Launch Loop

Photo # 6082 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 102 ROUTE NAME: Boat Launch Loop

Photo # 6083 - MP 0.25 - Begin Section 002

ROUTE NUMBER: 105 ROUTE NAME: Fishing Pier Access Road

Photo # 6088 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 200 ROUTE NAME: Picnic Area Access Road

Photo # 6085 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 300 ROUTE NAME: Headquarters Loop Road

Photo # 6103 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 400 ROUTE NAME: Donohoe Road

Photo # 6073 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 401 ROUTE NAME: Windmill Road

Photo # 6076 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 402 ROUTE NAME: Sharp-tail Road

Photo # 6080 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 403 ROUTE NAME: Dam Access Road

Photo # 6093 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 404 ROUTE NAME: Bone Yard Road

Photo # 6099 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 405 ROUTE NAME: Lee Paul Structure Road

Photo # 6104 - MP 0.00 - Begin Route at Begin Section

Accident Summary

Number of Accidents Reported	Timespan of Accidents	Injuries	Fatalities
0	No Accidents to Report	0	0

APPENDIX

FWS ROAD FUNCTIONAL CLASSIFICATION	
Class I	Principal Refuge Road (Public Roads) - Routes that constitute the main access route, main auto tour route, or thoroughfare for refuge visitors. These routes are accessible by 2WD vehicles. Routes are numbered from 10 to 99.
Class II	Connector Refuge Road (Public Roads) - Routes that provide circulation within the refuge. These routes can also provide access to areas of scenic, scientific, recreational or cultural interest, such as overlooks, campgrounds, education centers, etc. These routes are accessible by 2WD vehicles. Routes are numbered from 100 to 199.
Class III	Special Purpose Refuge Road (Public Roads) - Roads that provide circulation within special use areas such as campgrounds or public concessionaire facilities or access to remote areas of the refuge. These routes may not be 2WD accessible. Routes are numbered from 200 to 299
Class IV	Administrative Access Road (Administrative Roads) - Routes intended for access to administrative developments or structures such as maintenance offices, employee quarters, or utility areas. These routes are accessible by 2WD vehicles. These routes may restrict access to the general public. Routes are numbered from 300 to 399.
Class V	Restricted Road (Administrative Roads) - Routes normally closed to the public, such as maintenance roads, service roads, patrol roads, and fire breaks. These routes may be open to the public for a short period of time for a special use, such as hunting access. These routes may not be 2WD accessible. Routes are numbered from 400 to 499.

A refuge road system contains those routes within or giving access to a refuge or other unit of the FWS that are administered by the FWS, or by the Service in cooperation with other agencies. The assignment of a functional classification (FC) to a refuge road is not based on traffic volumes or design speed, but on the intended use or function of that route.

DESCRIPTION OF RATING SYSTEM

Rating Data is collected on four different surface types: Asphalt, Concrete, Gravel, and Native. The Utah LTAP Center's Remaining Service Life (RSL) system is used for all surface types. The RSL system is based on the Strategic Highway Research Program's (SHRP) Distress Identification Manual.

Asphalt Rating System

Data is collected on the following distresses and conditions:

- **Fatigue Cracking** - Interconnected cracks forming small irregular shapes.
- **Longitudinal Cracking** - Cracks running parallel with the roadway, in the direction of traffic.
- **Transverse Cracking** - Cracks perpendicular to the roadway, going across the lane or lanes.
- **Block Cracking** - Interconnected cracks forming large blocks.
- **Edge Cracking** – Cracks running along the edge of the pavement surface.
- **Patches** - Original surface repaired with new asphalt patch material.
- **Potholes** - Holes or depressions in the pavement.
- **Rutting** - surface depressions in the wheel paths.
- **Roughness –** Evenness of pavement for serviceability.
- **Drainage** – Ability of the road surface to drain water based on proper slope.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula

Fatigue, longitudinal, transverse, block, and edge cracking, along with patching and potholes are rated on a 0 - 9 scale (0 = no distress, 9 = maximum distress). The rating given is based on the extent and the severity of the distress. Rutting, roughness, and drainage are rated on a 0 - 3 scale (0 = excellent, 3 = poor). Each distress type has given Remaining Service Life (RSL) values (in years) based on the rating for that particular distress. The distress with the rating resulting in the lowest RSL value is considered to be the governing distress. That value is then assigned as the RSL of the road segment.

Concrete Rating System

Data is collected on the following distresses and conditions:

- **Spalling of Joints** – Chipping, breaking, or cracking of slab edges
- **Joint Seal Damage** – Any damage or condition that enables materials or water to infiltrate into the joint from the surface.
- **Corner Breaks** – A portion of the slab separated by a crack that intersects the adjacent transverse and longitudinal joints, forming approximately a 45° angle to the direction.
- **Broken Slabs** – Faulting and/or cracking localized to individual slabs.
- **Faulting** – Difference in elevation across a crack or joint.
- **Longitudinal Cracking** – Cracks in the pavement running parallel to road.

- **Transverse Cracking** - Cracks in the pavement running perpendicular to the direction of traffic.
- **Patch Deterioration** – Faulting, settling, or cracking of previously placed patch
- **Map Cracking** – A series of cracks that extend only into the upper surface of the Slab

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula
The rating procedure for concrete pavement is the same as that for asphalt pavement described previously. Each of the distresses described above are rated on the same 0 – 9 scale. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

Gravel and Native Rating System

Data is collected on the following distresses and conditions:
- **Cross Section (Crown)** - Roadway built so that the center is higher than the shoulder, to prevent water from pooling on roadway.
- **Roadside Drainage** - Roadside ditches and culverts to handle water flow and prevent pooling on the roadside.
- **Corrugations (Washboarding)** - Small trenches or holes developing perpendicular to the roadway.
- **Potholes** - Holes or depressions in the roadway.
- **Rutting** - Depressions running parallel with the roadway, in the wheelpaths.
- **Dust** - Amount of dust caused by traffic.
- **Loose Aggregate (Gravel Only)** - Loose gravel, typically piled up on the roadway edges or centerline.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula
The rating procedure for unpaved roads is the same as that for asphalt and concrete pavements described previously. Of the distresses described above, corrugations, potholes, rutting, and loose aggregate are rated on the same 0 – 9 scale previously mentioned. Cross section, roadside drainage, and dust are rated on the same 0 – 3 scale described for asphalt pavement. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

Condition Descriptions by Surface Type

The following definitions are used to describe pavement condition for the various surface types. These are general guidelines for condition indications.

Asphalt

Excellent – Recently constructed or overlaid road where construction or overlay was performed correctly- No maintenance required. RSL = 19-20 years.

Good – Low extent longitudinal and transverse cracks. All cracks are 1/4" or less with little or no crack erosion. Patches are in good condition and applied correctly. Routine Maintenance recommended. RSL = 13-18 years.

Fair - Roads are in good structural condition with little or no fatigue cracking. Longitudinal, transverse, and edge cracking is at medium extent and severity. Block cracking is not extensive. Any patches are in good condition. Preventative maintenance recommended. RSL = 7-12 years.

Poor - Road beginning to show signs of structural distress. Fatigue cracking is medium to high extent and medium severity. Cracking will be severe. Surface may have severe block cracking and show. Patches are in fair to poor condition. There is moderate distortion or rutting and occasional potholes. Rehabilitation recommended. RSL = 1-6 years.

Failed - Road is severely deteriorated. Signs of structural failure appear along with severe and extensive fatigue cracking, distortion, potholes, or extensive patches in poor condition. Reconstruction recommended. RSL = 0 years.

Concrete

Excellent - New pavement. No maintenance required. RSL = 19-20 years

Good - First signs of transverse cracking, patch or repair, more extensive pop-outs, or scaling. Sealing or routine maintenance recommended. RSL = 13-18 years.

Fair – Pavement has join or crack spalling, and/or faulting, along with cracking at corners with broken pieces. Any Patches are in fair condition and faulting is at a minimum. Preventative maintenance recommended. RSL = 7-12 years.

Poor - Joints and cracks are open 1 inch, spalled, or patched. Faulting is more severe. Rehabilitation recommended. RSL = 1-6 years.

Failed - Most slabs have failed structurally, and faulting is severe. Reconstruction recommended. RSL = 0 years.11-9

The following table shows the relationship between RSL and condition.

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Asphalt and Concrete Pavements)								
	FAILED	POOR		FAIR		GOOD		EXCELLENT
RSL Years	0	1-3	4-6	7-9	10-12	13-15	16-18	19-20

Gravel and Native

Note - Native surfaces do not have a gravel layer.

Excellent - Newly constructed road that has been constructed properly with proper crown, drainage and gravel layer. Little or no distress. No maintenance recommended. RSL = 8-10 years.

Good - Crown, drainage provisions, and gravel layer are in good condition. Distress limited to traffic effects such as dust, loose aggregate, and low severity corrugations (wash boarding). RSL = 5-7 years.

Fair - Adequate drainage and crown through majority of roadway. Crown repair, ditch improvement may be necessary. Road has more severe corrugations and potholes. Preventative maintenance recommended. RSL = 3-4 years.

Poor - Travel at slow speeds is necessary. Additional gravel layer needed to carry traffic. Poor crown. Ditching is inadequate and rutting is extensive and severe. Rehabilitation recommended. RSL = 1-2 years.

Failed - Travel is difficult, and road may be closed at times. Rutting and Corrugations are very severe. Total Reconstruction of road is recommended. RSL = 0 years.

The following table shows the RSL values for gravel and native roads in terms of excellent,good, fair, poor, and failed condition.

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Gravel and Native Surfaces)					
	FAILED	POOR	FAIR	GOOD	EXCELLENT
RSL Years	0	1-2	3-4	5-7	8-10